APPENDIX

Inventor: Jeffrey D. Marsh
Title of Application: APPARATUS AND METHOD OF ON DEMAND PRINTING,
BINDING, AND TRIMMING A PERFECT BOUND BOOK

Visual Basic Control Code
For Controller CONT 1 - AT6400 Controller

```
1    Public Sub Form_Load()
2       MessageWait = False
3       HaveBook = False
4       runcontinuous = False
5       textstr = ""
6       OffLineStr = "OFFLINE" & Chr(13) & Chr(10)
7       OnLineStr = "ONLINE" & Chr(13) & Chr(10)
8       inx = 0
9       SonicBound = 0
10      opencoms
11      cmdClrAll_Click
12      cmdStop.Visible = False
13      BindOnly = False
14      BBtoggle = True
15      msJobsPath = "c:\integrated\jobs"
16      ext = "PRM"
17      Winsock1.RemoteHost = "192.168.1.42"
18      Winsock1.RemotePort = 23 '80 'was 35
19      Winsock1.Connect
20      Winsock3.RemoteHost = "192.168.1.44"
21      Winsock3.RemotePort = 23 '80 'was 35
22      Winsock3.Connect
23   End Sub
24
25   Sub doit()
26      ' do we have to ??
27      Nextprm = 0
28      chars_sent = Form1SendCommand(Out10T)
29      chars_sent = Form1SendCommand(Out14T)
30      WriteStart ' tell the daemon to restart
31      chars_sent = Form1SendCommand(Out14F)
32      Text2.Text = Nextprm
33      Text2.Refresh
34      BindStep = -1
35      ShearStep = 0
36      BindTime = 0
37      ShearTime = 0
38      CoolTime = 0
39      NextNestMove = 0
40      TransPos = 0
41      NestPos = 0
```

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```
42      nestpos2 = 0
43      ShearPos = 0
44      ShearReady = True
45      shearloaded = False
46      ShearEmpty = False
47      OpenShear = False
48      BindTemp = False
49      ShearTemp = False
50      ShearTemp2 = False
51      ExitPushed = False
52      BB1Manual = False
53      BB2Manual = False
54      runcontinuous = False
55      Ts1 = 0
56      Ts2 = 0
57      Ts3 = 0
58      Ts4 = 0
59      Ts5 = 0
60      BinderReady = True
61      BinderLoaded = False
62      StopPushed = False
63      NewPrint = False
64      chars_sent = Form1SendCommand("COMEXC1")
65      Dim f1
66      Dim fso As New FileSystemObject, fldr As Folder
67      cmdGo.Visible = False
68      cmdExit.Visible = False
69      cmdStop.Visible = True
70      Set fs = CreateObject("Scripting.FileSystemObject")
71      Set Fileptr = fs.CreateTextFile("c:\makebook.log", True)
72      Fileptr.WriteLine ("Creating File")
73      Fileptr.Close
74      Text1.Text = ""
75      ' Form4.Poll60003 is I/O 3 BookBlock #1 Dropped
76      ' Form4.Poll60009 is I/O 8 BookBlock #2 Dropped
77      ' Form4.Poll60006 is I/O 7 CoverInPlace
78      ' Form4.Poll60008 is I/O 5 CoverInRail -> put Cover Printer Offline
79      booksource = 1
80      OnePrinting = False
81      OneReady = True
82      OneBBDone = False
83      OneBinding = False
84      TwoPrinting = False
85      TwoReady = True
```

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```
 86     TwoBBDone = False
 87     TwoBinding = False
 88     CoverOnHold = False
 89     Winsock1.SendData (Chr(13) & Chr(10))
 90     Winsock1.GetData strData
 91     Do While strData <> ""
 92       Winsock1.GetData strData
 93     Loop
 94     Winsock3.SendData (Chr(13) & Chr(10))
 95     Winsock3.GetData strData
 96     Do While strData <> ""
 97       Winsock3.GetData strData
 98     Loop
 99  Do
100      DoEvents
101      If StopPushed = True Then
102        chars_sent = Form1SendCommand("COMEXC0")
103        chars_sent = Form1SendCommand("D " + Str(TransStart) + ",0," + Str(NestZero) +
104   ",0")
105        chars_sent = Form1SendCommand("GO 1101")
106        chars_sent = Form1SendCommand("OUT 000000000000000000000000")
107        chuteup
108        If BindOnly Then
109        NestPos = 0
110        chars_sent = Form1SendCommand("V ,20:D " + "," + Str(NestPos) + ",,")
111        chars_sent = Form1SendCommand("GO X1XX")
112        pause (5)
113        End If
114        Exit Do
115      End If
116      Form1.Comm60001.UpdateFastStatus
117      AXIS1POS = Form1.Comm60001.GetFastStatusItem(AXIS1_MOTOR)
118      AXIS2POS = Form1.Comm60001.GetFastStatusItem(AXIS2_MOTOR)
119      AXIS3POS = Form1.Comm60001.GetFastStatusItem(AXIS3_MOTOR)
120      AXIS4POS = Form1.Comm60001.GetFastStatusItem(AXIS4_MOTOR)
121      Axis1Stat = Form1.Comm60001.GetFastStatusItem(AXIS1_STATUS)
122      Axis2Stat = Form1.Comm60001.GetFastStatusItem(AXIS2_STATUS)
123      Axis3Stat = Form1.Comm60001.GetFastStatusItem(AXIS3_STATUS)
124      axis4stat = Form1.Comm60001.GetFastStatusItem(AXIS4_STATUS)
125      Instat = Form1.Comm60001.GetFastStatusItem(INPUT_STATUS)
126      Form1.Poll60001.Update
127      ShearLimit = Val(Form1.Poll60001.value)
128      Form4.Poll60008.Update
129      CoverRailValue = Val(Form4.Poll60008.value)
```

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```
130        Form4.Poll60006.Update
131        CoverPlaceValue = Val(Form4.Poll60006.value)
132        Form4.Poll60005.Update
133        BB1DroppedValue = Val(Form4.Poll60005.value)
134        Form4.Poll60009.Update
135        BB2DroppedValue = Val(Form4.Poll60009.value)
136        Form1.Text8.Text = Str(BindStep)
137        Form1.Text8.Refresh
138        Form1.Text9.Text = Str(BindTime)
139        Form1.Text9.Refresh
140        Form1.Text10.Text = Str(ShearStep)
141        Form1.Text10.Refresh
142        Form1.Text11.Text = Str(ShearTime)
143        Form1.Text11.Refresh
144        Form1.Text12.Text = Str(Axis1Stat)
145        Form1.Text12.Refresh
146        Form1.Text13.Text = Str(Instat)
147        Form1.Text13.Refresh
148        Form1.Text15.Text = Str(Axis2Stat)
149        Form1.Text15.Refresh
150        Form1.Text16.Text = Str(Axis3Stat)
151        Form1.Text16.Refresh
152        Form1.Text17.Text = Str(axis4stat)
153        Form1.Text17.Refresh
154        Form1.Text18.Text = Str(AXIS1POS)
155        Form1.Text18.Refresh
156        Form1.Text19.Text = Str(AXIS2POS)
157        Form1.Text19.Refresh
158        Form1.Text20.Text = Str(AXIS3POS)
159        Form1.Text20.Refresh
160        Form1.Text21.Text = Str(AXIS4POS)
161        Form1.Text21.Refresh
162        Form1.Text22.Text = Str(TransPos)
163        Form1.Text22.Refresh
164        Form1.Text23.Text = Str(NestPos)
165        Form1.Text23.Refresh
166        Form1.Text24.Text = Str(NestRotPos)
167        Form1.Text24.Refresh
168        Form1.Text25.Text = Str(ShearPos)
169        Form1.Text25.Refresh
170
171    If BindOnly = True Then
172        Bindloop
173        chars_sent = Form1SendCommand("COMEXC0")
```

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```
174       chars_sent = Form1SendCommand("D " + Str(TransStart) + ",0," + Str(NestZero) +
175   ",0")
176       chars_sent = Form1SendCommand("GO 1101")
177       chars_sent = Form1SendCommand("OUT 00000000000000000000000000")
178       cmdStop_Click
179     Exit Do
180   End If
181       If OneReady = True Then ' And CoverOnHold = False Then
182         WriteReadyOne
183         OneReady = False
184       End If
185
186       If TwoReady = True Then 'And CoverOnHold = False Then
187         WriteReadyTwo
188         TwoReady = False
189       End If
190
191       If OneReady = False And OneBBDone = False Then
192         Winsock1.GetData strData
193         If InStr(strData, "Printing") > 0 Then
194           OnePrinting = True
195           Text1.Text = strData
196           strData = ""
197           Text1.Text = "One Printing" + Chr(13) + Chr(10) + Text1.Text
198           Text1.Refresh
199         End If
200         If InStr(Left(strData, 5), "Idle") > 0 And OnePrinting = True Then
201           OneBBDone = True
202           OnePrinting = False
203           strData = ""
204           Text1.Text = "One Done" + Chr(13) + Chr(10) + Text1.Text
205           Text1.Refresh
206         End If
207         Winsock1.GetData strData
208         Do While strData <> ""
209           Winsock1.GetData strData
210         Loop
211       End If ' to OneReady TCP/IP Read
212
213       If TwoReady = False And TwoBBDone = False Then
214         Winsock3.GetData strData
215         If InStr(strData, "Printing") > 0 Then
216           TwoPrinting = True
217           Text1.Text = strData
```

```
218        strData = ""
219        Text1.Text = "Two Printing" + Chr(13) + Chr(10) + Text1.Text
220        Text1.Refresh
221      End If
222      If InStr(Left(strData, 5), "Idle") > 0 And TwoPrinting = True Then
223        TwoBBDone = True
224        TwoPrinting = False
225        strData = ""
226        Text1.Text = "Two Done" + Chr(13) + Chr(10) + Text1.Text
227        Text1.Refresh
228      End If
229      Winsock3.GetData strData
230      Do While strData <> ""
231        Winsock3.GetData strData
232      Loop
233    End If  ' to TwoReady TCP/IP Read
234
235    If CoverOnHold = False And CoverRailValue = 1 Then
236      CoverOnHold = True
237    End If
238
239    If CoverOnHold = True And CoverRailValue = 0 Then
240      CoverOnHold = False
241    End If
242
243    If OpenShear = True And Val(Timer()) > ShearTime + 6 Then  'Global if to stop
244  shear open
245      chars_sent = Form1SendCommand(Out11F) 'Stop Shear Open
246      chars_sent = Form1SendCommand(Out12F)
247      chars_sent = Form1SendCommand(Out20F)
248      chars_sent = Form1SendCommand(Out21F)
249      OpenShear = False
250    End If
251  '*********** Put goto 1 & 2 Routines, Clamp and goto start routines here
252
253    If BindStep = -1 And booksource = 1 And ((OneBBDone = True And
254  CoverPlaceValue = 1) Or BB1Manual = True) Then
255      BindStep = 0
256      chars_sent = Form1SendCommand(Out2T)  ' Open
257      TransPos = Book1Start
258      sendstr = "A 10:V 5:D " + Str(TransPos) + ":GO 1XXX"
259      chars_sent = Form1SendCommand(sendstr)
260      WriteStatus ("BindStep = -1  OneBBDone")
261    End If  ' This starts the BB Controller to Release the Book
```

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```
262
263        If BindStep = -1 And booksource = 2 And ((TwoBBDone = True And
264   CoverPlaceValue = 1) Or BB2Manual = True) Then
265            BindStep = 0
266            chars_sent = Form1SendCommand(Out2T)  ' Open
267            TransPos = Book2Start
268            sendstr = "A 10:V 5:D " + Str(TransPos) + ":GO 1XXX"
269            chars_sent = Form1SendCommand(sendstr)
270            WriteStatus ("BindStep = -1  TwoBBDone")
271        End If  ' This starts the BB Controller to Release the Book
272
273        If BindStep = 0 And BB1DroppedValue = 1 And booksource = 1 Then
274            BindStep = 1#
275            chars_sent = Form1SendCommand(Out5T) 'Glue pot motor ON
276            chars_sent = Form1SendCommand(Out2F) 'Stop open
277            pause (0.2)
278            chars_sent = Form1SendCommand(Out1T)  ' Grab The BB
279            BindTime = Val(Timer())
280        WriteStatus ("BindStep = 1  BookSource=1")
281        End If
282
283        If BindStep = 0 And BB2DroppedValue = 1 And booksource = 2 Then
284            BindStep = 1#
285            chars_sent = Form1SendCommand(Out5T) 'Glue pot motor ON
286            chars_sent = Form1SendCommand(Out2F) 'Stop open
287            pause (0.2)
288            chars_sent = Form1SendCommand(Out1T)  ' Grab The BB
289            BindTime = Val(Timer())
290            WriteStatus ("BindStep = 1  BookSource=2")
291        End If
292
293        If BindStep = 1# And Val(Timer()) > BindTime + 4 Then
294            BindStep = 1.2
295            chars_sent = Form1SendCommand(Out1F)
296            TransPos = TransStart
297            sendstr = "A 8:V 15:D " + Str(TransPos) + ":GO 1XXX"
298            chars_sent = Form1SendCommand(sendstr)
299            WriteStatus ("BindStep = 1.2  Start Move")
300        End If
301
302        If BindStep = 1.2 And AXIS1POS = TransPos Then 'Universal Jog
303            BindStep = 1.3
304            chars_sent = Form1SendCommand(Out1F) 'Stop Clamp
305            pause (0.2)
```

```
306        chars_sent = Form1SendCommand(Out2T) 'Clamp Out
307        BindTime = Val(Timer())
308     End If
309
310     If BindStep = 1.3 And Val(Timer()) > BindTime + 1.4 Then  'was 2 seconds
311        BindStep = 1.4
312        chars_sent = Form1SendCommand(Out2F) 'Clamp Stop
313        chars_sent = Form1SendCommand(Out0T)
314        TransPos = TransStart + 37000
315        sendstr = "A 1:V 1:D " + Str(TransPos) + ":GO 1XXX"
316        chars_sent = Form1SendCommand(sendstr)
317        BindTime = Val(Timer())
318        WriteStatus ("BindStep = 1.4  BookSource=" + Str(booksource))
319     End If
320
321     If BindStep = 1.4 And Val(Timer()) > BindTime + 5 Then
322        BindStep = 1.5
323        chars_sent = Form1SendCommand(Out1T)
324        chars_sent = Form1SendCommand(Out0F)
325        BindTime = Val(Timer())
326        WriteStatus ("BindStep = 1.5  BookSource=" + Str(booksource))
327     End If
328
329     If BindStep = 1.5 And Val(Timer()) > BindTime + 4 Then
330        BindStep = 2#
331        chars_sent = Form1SendCommand(Out1F)
332        WriteStatus ("BindStep = 2  BookSource=" + Str(booksource))
333     End If
334
335     If BindStep = 2# And (CoverPlaceValue = 1 Or BB1Manual = True Or BB2Manual =
336  True) Then ' Ready to go!
337        BindStep = 2.1
338        If booksource = 1 And runcontinuous = False Then BB1Manual = False
339        If booksource = 2 And runcontinuous = False Then BB2Manual = False
340        If BindOnly <> True Then
341        nextfile = "C:\integrated\jobs\" + Trim(Str(Nextprm)) + "C.PRM"
342        Set fso = CreateObject("Scripting.FileSystemObject")
343        If fso.FileExists(nextfile) = True Then
344        Set ts = fso.OpenTextFile(nextfile, ForReading)
345        Do While Not (ts.AtEndOfStream)
346           s = ts.ReadLine
347           start = InStr(s, "=")
348           If start < 1 Then Exit Do
349           arg = Left(s, start - 1)
```

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```
350    value = Right(s, Len(s) - start)
351    If (arg = "TITLE") Then
352       Form1.Text14.Text = value + "  " + nextfile
353       Form1.Caption = "Perfect Finish - " & value
354    End If
355    If (arg = "A") Then
356       Form1.txtPrm(0) = value
357    End If
358    If (arg = "B") Then
359       Form1.txtPrm(1) = value
360    End If
361    If (arg = "C") Then
362       Form1.txtPrm(2) = value
363    End If
364    If (arg = "D") Then
365       Form1.txtPrm(3) = value
366    End If
367    If (arg = "E") Then
368       Form1.txtPrm(4) = value
369    End If
370    If (arg = "F") Then
371       Form1.txtPrm(5) = value
372    End If
373    If (arg = "S") Then
374       Form4.Text5 = value
375       Form4.Text6 = value
376       Form4.Refresh
377    End If
378    Loop
379    Form1.Refresh
380    ts.Close
381    fso.DeleteFile nextfile
382    Nextprm = Nextprm + 1
383    End If ' to fileexists
384    End If ' to bindonly check
385    T1 = Val(Form1.txtPrm(0))
386    T2 = Val(Form1.txtPrm(1))
387    T3 = Val(Form1.txtPrm(2))
388    T4 = Val(Form1.txtPrm(3))
389    T5 = Val(Form1.txtPrm(4))
390    T6 = Val(Form1.txtPrm(5))
391    sendstr = Out3T
392    chars_sent = Form1SendCommand(sendstr)
393    WriteStatus ("BindStep = 2.1  Jogger Off, Mill On")
```

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```
394        TransPos = BINDZERO + Int(T2 * TransMult)
395        sendstr = "A 10:V 5:D " + Str(TransPos) + ":GO 1XXX"
396        chars_sent = Form1SendCommand(sendstr)
397        chars_sent = Form1SendCommand(Out1T)
398        WriteStatus ("BindStep = 2  Move Transport, Move Cover")
399      End If
400
401      If AXIS1POS > CutterStart And BindStep = 2.1 Then
402        BindStep = 2.2
403        sendstr = "V " + Form4.Text5 + ":GO 1XXXX"
404        chars_sent = Form1SendCommand(sendstr)
405        WriteStatus ("BindStep = 2.1  Set Mill Transport Speed")
406      End If
407
408      If AXIS1POS > (WaveStart - Int(TransMult * T1)) And BindStep = 2.2 Then
409        BindStep = 2.3
410        sendstr = "V " + Form4.Text6 + ":GO 1XXXX"
411        CoolTime = (5 - Val(Form4.Text6)) * 5
412        If CoolTime < 0 Then CoolTime = 0
413        chars_sent = Form1SendCommand(sendstr)
414        WriteStatus ("BindStep = 2.2  Set Gluepot Transport Speed")
415      End If
416
417      If AXIS1POS > ThruWipe And BindStep = 2.3 Then
418        BindStep = 3
419        sendstr = "V 12 : GO 1XXXX"
420        chars_sent = Form1SendCommand(sendstr)
421        chars_sent = Form1SendCommand(Out1F)
422      End If
423
424      If AXIS1POS = TransPos And BindStep = 3 Then
425        BindTime = Val(Timer())
426        BindStep = 4
427        chars_sent = Form1SendCommand(Out3F + ":" + Out5F + ":" + Out6T) 'Mill off
428        WriteStatus ("BindStep = 3  Mill Off, Glue Pot Off, Table Up")
429      End If
430
431      If BindStep = 4 And Val(Timer()) > (BindTime + 1.9) Then
432        BindTime = Val(Timer())
433        BindStep = 5
434        chars_sent = Form1SendCommand(Out8T) 'Nippers In
435        WriteStatus ("BindStep = 4  Table Pump Off  Nippers In")
436      End If
437
```

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```
438    If BindStep = 5 And Val(Timer()) > (BindTime + 7.9 + CoolTime) Then
439        BindTime = Val(Timer())
440        BindStep = 6
441        BindTemp = False
442        chars_sent = Form1SendCommand(Out8F) 'Jaws OUT (turn motor off)
443        WriteStatus ("BindStep = 5  Jaws Out")
444    End If
445
446    If BindStep = 6 And Val(Timer()) > (BindTime + 0.2) And ShearReady Then
447        BindTemp = True
448        If booksource = 1 Then
449           OneReady = True
450           OneBBDone = False
451           Text1.Text = "#1 Through Bind"
452           Text1.Refresh
453        Else
454           TwoReady = True
455           TwoBBDone = False
456           Text1.Text = "#2 Through Bind"
457           Text1.Refresh
458        End If
459
460        BindStep = 9
461        Form1SendCommand (Out9F) 'Nest Clamp
462        Form1SendCommand (Out15T) 'Solenoid
463        Form1SendCommand (Out17T) 'Rot Rev
464        Form1SendCommand (Out16T) 'Rotate
465        ShearTime = Val(Timer())
466        DoOpenShear
467        BindTime = Val(Timer())
468        TransPos = NestCLH - Int((T1 / 2 - T2) * TransMult) - 37000
469        chars_sent = Form1SendCommand("V 10" + ":" + "D " + Str(TransPos) +
470   ",0,0,150000:" + "GO 11XX")
471        chars_sent = Form1SendCommand(Out6F) ' Table DOWN
472        Form1SendCommand (Out15F)
473        WriteStatus ("BindStep = 7  Rotate Nest, Move To Drop")
474    End If
475
476    If BindStep > 8 And Val(Timer()) > (BindTime + 1.9) And BindTemp = True Then
477        BindTemp = False
478    End If
479
480    If BindStep = 9 And TransPos = AXIS1POS Then
481        chuteup
```

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```
482          BindStep = 10
483          NestPos = NestUp
484          NestRotPos = NestZero
485          chars_sent = Form1SendCommand("A ,,,10:V ,,,15")
486          ShearMove = ShearToNestCL + Int((0.5 * T1 + 1.75) * ShearMult)
487          ShearPos = ShearMove
488          chars_sent = Form1SendCommand("D " + "," + Str(NestPos) + ",," +
489      Str(ShearPos) + ":" + "GO X1X1")
490            WriteStatus ("BindStep = 9  Nest Up, Move Shear In To Guide Paper")
491          End If
492
493          'bindonly step 10
494          If BindStep = 10 And NestPos = AXIS2POS And ShearPos = AXIS4POS And
495      BindOnly = True Then
496            BindStep = 11
497            chars_sent = Form1SendCommand(Out2T)
498            pause (2)
499            chars_sent = Form1SendCommand(Out2F)
500            chars_sent = Form1SendCommand(Out9T) 'Nest Clamp IN
501            ShearPos = 100000
502            NestPos = 400000
503            chars_sent = Form1SendCommand("V ,15 : D ," + Str(NestPos) + ",," +
504      Str(ShearPos) + ": GO X1X1")
505            WriteStatus ("BindStep = 10  Nudge, Clamp Book, Move Down")
506            If booksource = 1 Then
507              booksource = 2
508            Else
509              booksource = 1
510            End If
511          End If
512
513
514          If BindStep = 10 And NestPos = AXIS2POS And ShearPos = AXIS4POS Then
515            BindStep = 11
516            'The Nudge
517            chars_sent = Form1SendCommand(Out2T)
518            pause (2)
519            chars_sent = Form1SendCommand(Out2F)
520            TransPos = NestCLH - Int((T1 / 2 - T2) * TransMult) '- 15000
521            chars_sent = Form1SendCommand(Out2F + ":" + "A 1: V 2: D " + Str(TransPos) +
522      ":" + "Go 1") '03/03/00
523            For i = 1 To 5000
524              Form1.Comm60001.UpdateFastStatus
525              xpos = Form1.Comm60001.GetFastStatusItem(AXIS1_MOTOR)
```

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```
526        If xpos = TransPos Then i = 11000
527          Call Timer1_Timer
528        Next i
529        If i < 10000 Then
530          MsgBox "Failed move!"
531          DoAReset
532          End
533        End If
534        NestPos = NestUp - 20000
535        TransPos = TransPos - 5000
536        chars_sent = Form1SendCommand("D " + Str(TransPos) + "," + Str(NestPos) + "
537  : GO 11XX")
538        pause (1)
539        chars_sent = Form1SendCommand(Out9T) 'Nest Clamp IN
540        pause (2)
541        BindTime = Val(Timer())
542        NestPos = NestDN
543        chars_sent = Form1SendCommand("V ,15:D " + "," + Str(NestPos) + ",,")
544        chars_sent = Form1SendCommand("GO X1XX")
545        ChuteValue = Val(Form4.Poll60002.value)
546        If ChuteValue <> 1 Then
547          MsgBox "delivery chute failed to return!"
548          DoAReset
549          End
550        End If
551        WriteStatus ("BindStep = 10  Nudge, Clamp Book, Move Down")
552        If booksource = 1 Then
553          booksource = 2
554        Else
555          booksource = 1
556        End If
557      End If
558
559
560
561      If BindStep = 11 And (AXIS2POS > 800000 Or (AXIS2POS > 300000 And BindOnly
562  = True)) Then
563        BindStep = 12
564        '**********Where to go
565        If booksource = 2 Then
566          TransPos = Book2Start - 37000
567        Else
568          TransPos = TransStart
569        End If
```

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```
570        chars_sent = Form1SendCommand("A 15")
571        chars_sent = Form1SendCommand("V 15")
572        chars_sent = Form1SendCommand("D " + Str(TransPos))
573        chars_sent = Form1SendCommand("GO 1XXX")
574        chars_sent = Form1SendCommand(Out1T)
575        shearloaded = True
576        ShearEmpty = False
577        'ShearStep = 0 removed 04/27 for dual printer
578        ShearReady = False
579        Ts1 = T1
580        Ts2 = T2
581        Ts3 = T3
582        Ts4 = T4
583        Ts5 = T5
584        WriteStatus ("BindStep = 11 not BindOnly  Move Transport to:" & Str(TransPos))
585    End If
586
587    If BindStep = 12 Then
588        BindStep = 13
589    End If
590
591    If BindStep = 13 And TransPos = AXIS1POS Then
592        BindTime = Val(Timer())
593        BindStep = 14
594        chars_sent = Form1SendCommand(Out1F)
595        pause (0.2)
596        chars_sent = Form1SendCommand(Out2T)
597        WriteStatus ("BindStep = 13   Open Jaws")
598    End If
599
600    If BindStep = 14 And Val(Timer()) > (BindTime + 3) Then
601        BindStep = -1
602        chars_sent = Form1SendCommand(Out2F)
603        BinderReady = True
604        WriteStatus ("BindStep = 14 Transport ready at: " & Str(TransPos))
605    End If
606
607    If BindOnly And ShearStep = 0 And shearloaded = True Then
608        NextNestMove = Val(Timer())
609        shearloaded = False
610        ShearStep = 18
611    End If
612
```

```
613    If shearloaded = True And ShearStep = 0 And AXIS2POS = NestPos And
614    Val(Timer()) > (ShearTime + 4) Then '03/03/00
615        S1 = Ts1
616        S2 = Ts2
617        S3 = Ts3
618        S4 = Ts4
619        S5 = Ts5
620        chars_sent = Form1SendCommand(Out11F)
621        chuteup
622        ShearStep = 1
623        ShearPos = ShearToNestCL + Int((S3 - S1 / 2) * ShearMult)
624        chars_sent = Form1SendCommand("A ,10,,20" + ":" + "V ,,,20" + ":" + "D " + ",,,"
625    + Str(ShearPos) + ":" + "GO XXX1")
626        WriteStatus ("ShearLoaded and ShearStep=1 S3=" + Str(S3) + " S1=" + Str(S1))
627    End If
628
629
630
631    If ShearStep = 1 And AXIS2POS = NestPos And AXIS4POS = ShearPos Then
632    'START CUT ONE
633        ShearStep = 2
634        shearloaded = False
635        chars_sent = Form1SendCommand(Out20T) 'Start the Clamp Down
636        chars_sent = Form1SendCommand(Out12F)
637        chars_sent = Form1SendCommand(Out11T)
638        ShearTime = Val(Timer())
639        Form1.Poll60001.Update
640        Shearvalue = Val(Form1.Poll60001.value)
641        Do While Shearvalue < 1 And Val(Timer()) < ShearTime + 4 'Wait for Clamp
642    Pressure
643            Form1.Poll60001.Update
644            Shearvalue = Val(Form1.Poll60001.value)
645        Loop
646        chars_sent = Form1SendCommand(Out20F)
647        chars_sent = Form1SendCommand(Out21T)  'Start the Blade Down
648        ShearTime = Val(Timer())
649        WriteStatus ("ShearStep = 1  Clamp Down Cut One")
650    End If
651
652    If ShearStep = 2 And Val(Timer()) > ShearTime + 3 Then
653        ShearTime = Val(Timer())
654        Form1.Poll60001.Update
655        Shearvalue = Val(Form1.Poll60001.value)
656        Do While Shearvalue < 1 And Val(Timer()) < ShearTime + 4
```

```
657        Form1.Poll60001.Update
658         Shearvalue = Val(Form1.Poll60001.value)
659       Loop
660       pause (1)
661       chars_sent = Form1SendCommand(Out11F)
662       chars_sent = Form1SendCommand(Out12F)
663       pause (0.5)
664       chars_sent = Form1SendCommand(Out20F)
665       chars_sent = Form1SendCommand(Out21F)
666       ShearStep = 3
667       WriteStatus ("ShearStep = 2  End Cut One")
668     End If
669
670     If ShearStep = 3 Then
671       ShearStep = 4
672       ShearTime = Val(Timer())
673       DoOpenShear
674       WriteStatus ("ShearStep = 3  Open Shear Started after CUT ONE")
675     End If
676
677     If ShearStep = 4 And Val(Timer()) > (ShearTime + 2) Then
678       ShearStep = 5
679       ShearPos = ShearPos + Int((0.75 * ShearMult)) 'Changed from 1.25 to .75
680  02/02/00
681       chars_sent = Form1SendCommand("D ,,," + Str(ShearPos) + ":" + "GO XXX1")
682       WriteStatus ("ShearStep = 4  Move Shear Back")
683     End If
684
685     If ShearStep = 5 And AXIS4POS = ShearPos And Val(Timer()) > (ShearTime + 4.5)
686  Then
687       ShearStep = 5.5
688       NestMoveUp = Int((S1 / 2 - (S1 - S3) - 1.5) * ElevMult) '1 gives 1/2" clear
689       NestPos = NestDN - NestMoveUp
690       chars_sent = Form1SendCommand("D ," + Str(NestPos) + ":" + "GO X1XX")
691       ShearTemp = True
692       pause (0.2)
693       chars_sent = Form1SendCommand(Out15F) 'Solenoid Off
694       chars_sent = Form1SendCommand(Out16F) 'Rot Off
695       chars_sent = Form1SendCommand(Out17F) 'Rot Rev
696       chars_sent = Form1SendCommand(Out16T) 'Rot
697       pause (0.5)
698       WriteStatus ("ShearStep = 5  Shut Shear Off, Move Nest, Wait, Rotate Nest")
699     End If
700
```

APPENDIX

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```
701      If ShearStep = 5.5 And AXIS2POS = NestPos Then
702          ShearStep = 6
703          NestMoveUp = Int((S1 / 2 - (S1 - S3) - 1) * ElevMult) '1 gives 1/2" clear
704          NestPos = NestDN - NestMoveUp
705          chars_sent = Form1SendCommand("D ," + Str(NestPos) + ":" + "GO X1XX")
706          ShearTemp = True
707          WriteStatus ("ShearStep = 5.5  Complete Nest Move")
708      End If
709      If ShearStep = 6 And AXIS2POS = NestPos And OpenShear = False Then
710          ShearStep = 7
711          ShearTemp = False
712          ShearPos = ShearToNestBot + Int(S4 * ShearMult)
713          chars_sent = Form1SendCommand("V,,,15:D ,,," + Str(ShearPos) + ":" + "GO
714  XXX1")
715          WriteStatus ("ShearStep = 6  Move Shear In")
716      End If
717
718      If ShearStep = 7 And AXIS4POS = ShearPos Then
719          ShearStep = 8
720          chars_sent = Form1SendCommand(Out20T) 'Start the Clamp Down
721          chars_sent = Form1SendCommand(Out12F)
722          chars_sent = Form1SendCommand(Out11T)
723          ShearTime = Val(Timer())
724          Form1.Poll60001.Update
725          Shearvalue = Val(Form1.Poll60001.value)
726          Do While Shearvalue < 1 And Val(Timer()) < ShearTime + 4 'Wait for Clamp
727  Pressure
728              Form1.Poll60001.Update
729              Shearvalue = Val(Form1.Poll60001.value)
730          Loop
731          chars_sent = Form1SendCommand(Out20F)
732          chars_sent = Form1SendCommand(Out21T)  'Start the Blade Down
733          ShearTime = Val(Timer())
734          WriteStatus ("ShearStep = 7  Clamp Down Cut TWO")
735      End If
736
737      If ShearStep = 8 And Val(Timer()) > ShearTime + 3 Then 'Reduced Shear Time 2
738  02/02/00
739          ShearStep = 9
740          ShearTime = Val(Timer())
741          Form1.Poll60001.Update
742          Shearvalue = Val(Form1.Poll60001.value)
743          Do While Shearvalue < 1
744              Form1.Poll60001.Update
```

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```
745          Shearvalue = Val(Form1.Poll60001.value)
746       Loop
747       pause (1)
748       chars_sent = Form1SendCommand(Out11F)
749       chars_sent = Form1SendCommand(Out12F)
750       pause (0.5)
751       chars_sent = Form1SendCommand(Out20F)
752       chars_sent = Form1SendCommand(Out21F)
753       WriteStatus ("ShearStep = 8  End Cut TWO")
754    End If
755
756    If ShearStep = 9 Then
757       ShearStep = 10
758       ShearTime = Val(Timer())
759       DoOpenShear
760       WriteStatus ("ShearStep = 9  Open Shear Started after CUT TWO")
761    End If
762
763    If ShearStep = 10 And Val(Timer()) > (ShearTime + 1) Then
764       ShearStep = 11
765       ShearPos = ShearPos + Int(0.75 * ShearMult) ' Changed from 1.25 to .75
766 02/02/00
767       chars_sent = Form1SendCommand("D ,,," + Str(ShearPos) + ":" + "GO XXX1")
768       WriteStatus ("ShearStep = 10  Move Shear Out")
769    End If
770
771       If ShearStep = 11 And AXIS4POS = ShearPos And Val(Timer()) > (ShearTime +
772 3.5) Then
773       ShearStep = 12
774      chars_sent = Form1SendCommand(Out17F) 'Rot Rev
775      chars_sent = Form1SendCommand(Out16F) 'Rot Off
776      pause (1)
777      chars_sent = Form1SendCommand(Out15T) 'Solenoid Off
778      chars_sent = Form1SendCommand(Out16T) 'Rot
779      WriteStatus ("ShearStep = 11  Rotate Nest")
780    End If
781
782    If ShearStep = 12 And Val(Timer()) > (ShearTime + 3) Then
783       ShearStep = 13
784      NestPos = Nest180Up + Int(2 * ElevMult)
785      chars_sent = Form1SendCommand("D ," + Str(NestPos) + ":" + "GO X1XX")
786      WriteStatus ("ShearStep = 12  Move Nest")
787    End If
788
```

```
789        If ShearStep = 13 And OpenShear = False Then
790            ShearStep = 14
791            FinalNestPos = Nest180Up
792            ShearPos = ShearToNestCL + Int(S1 / 2 * ShearMult) - Int(S3 * ShearMult) +
793    Int(S5 * ShearMult)
794            chars_sent = Form1SendCommand("D ," + Str(FinalNestPos) + ",," +
795    Str(ShearPos))
796            chars_sent = Form1SendCommand("GO XXX1")
797            pause (1)
798            chars_sent = Form1SendCommand("GO X1XX")
799            WriteStatus ("ShearStep = 13  Move Shear and Nest to final third cut position")
800        End If
801
802        If ShearStep = 14 And AXIS4POS = ShearPos And AXIS2POS = FinalNestPos
803    Then
804            ShearStep = 15
805            ShearTime = Val(Timer())
806            chars_sent = Form1SendCommand(Out15F) 'Solenoid Off
807            chars_sent = Form1SendCommand(Out20T) 'Start the Clamp Down
808            chars_sent = Form1SendCommand(Out12F)
809            chars_sent = Form1SendCommand(Out11T)
810            ShearTime = Val(Timer())
811            Form1.Poll60001.Update
812            Shearvalue = Val(Form1.Poll60001.value)
813            Do While Shearvalue < 1 And Val(Timer()) < ShearTime + 4 'Wait for Clamp
814    Pressure
815                Form1.Poll60001.Update
816                Shearvalue = Val(Form1.Poll60001.value)
817            Loop
818            chars_sent = Form1SendCommand(Out20F)
819            chars_sent = Form1SendCommand(Out21T)  'Start the Blade Down
820            ShearTime = Val(Timer())
821            WriteStatus ("ShearStep = 14  Clamp Down Cut THREE")
822        End If
823
824        If ShearStep = 15 And Val(Timer()) > ShearTime + 3 Then ' reduced shear time by
825    2 02/02/00
826            ShearStep = 16
827            ShearTime = Val(Timer())
828            Form1.Poll60001.Update
829            Shearvalue = Val(Form1.Poll60001.value)
830            Do While Shearvalue < 1
831                Form1.Poll60001.Update
832                Shearvalue = Val(Form1.Poll60001.value)
```

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```
833        Loop
834        pause (1)
835        chars_sent = Form1SendCommand(Out11F)
836        chars_sent = Form1SendCommand(Out12F)
837        pause (0.5)
838        chars_sent = Form1SendCommand(Out20F)
839        chars_sent = Form1SendCommand(Out21F)
840        WriteStatus ("ShearStep = 15  End Cut THREE")
841     End If
842
843     If ShearStep = 16 Then
844        ShearStep = 17
845        ShearTime = Val(Timer())
846        DoOpenShear
847        WriteStatus ("ShearStep = 16  Open Shear Started after CUT THREE")
848        ShearTemp = False
849        ShearTemp2 = False
850     End If
851
852     If ShearStep = 17 And Val(Timer()) > ShearTime + 2 And axis4stat = 262192 Then
853        ShearStep = 18
854        ShearPos = 100000
855        chars_sent = Form1SendCommand("V ,20,,20: D ,,," + Str(ShearPos))
856        chars_sent = Form1SendCommand("GO XXX1")
857        NextNestMove = Val(Timer())
858        WriteStatus ("ShearStep = 17  Move Shear Back")
859        ShearTemp = True
860     End If
861
862     If ShearStep = 18 And Val(Timer()) > (NextNestMove + 1) And AXIS4POS =
863  ShearPos Then
864        ShearStep = 19
865        NestPos = 400000
866        chars_sent = Form1SendCommand("V ,20: D ," + Str(NestPos))
867        chars_sent = Form1SendCommand("GO X1XX")
868        chars_sent = Form1SendCommand(Out17F) 'Rot Rev
869        chars_sent = Form1SendCommand(Out16F) 'Rot Off
870        chars_sent = Form1SendCommand(Out15T) 'Solenoid ON
871        chars_sent = Form1SendCommand(Out17T) 'Rot Rev
872        chars_sent = Form1SendCommand(Out16T) 'Rot
873        chutedown
874        WriteStatus ("ShearStep = 18  Move Nest Up, Rotate Nest, Call ChuteDown")
875     End If
876
```

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```
877        If ShearStep = 19 And ChuteIsDown = True Then
878            ShearStep = 20
879            chars_sent = Form1SendCommand(Out16F) 'Rot off
880            chars_sent = Form1SendCommand(Out17F) 'Rot revOff
881            chars_sent = Form1SendCommand(Out15F) 'Solenoid Off
882            pause (1)
883            chars_sent = Form1SendCommand(Out16T) 'Rot
884            WriteStatus ("ShearStep = 19 and Doing Second Rotation")
885            NextNestMove = Val(Timer())
886        End If
887
888        If ShearStep = 20 And Val(Timer()) > (NextNestMove + 1) Then
889            ShearStep = 21
890            ShearTemp = False
891            ShearTemp2 = False
892            chars_sent = Form1SendCommand(Out11F)
893            chars_sent = Form1SendCommand(Out9F) 'Nest Clamp
894            ShearTime = Val(Timer())
895            WriteStatus ("ShearStep = 20  Open Book Clamp")
896            NextNestMove = Val(Timer())
897            pause (2)
898        End If
899
900        If ShearStep = 21 And Val(Timer()) > (NextNestMove + 2) Then
901            ShearStep = 22
902            chars_sent = Form1SendCommand(Out16F) 'Rot Off
903            chars_sent = Form1SendCommand(Out17F) 'Rot Off
904            NestPos = 0
905            chars_sent = Form1SendCommand("V ,20: D ," + Str(NestPos))
906            chars_sent = Form1SendCommand("GO X1XX")
907            chuteup
908            ShearTime = Val(Timer())
909            Form1SendCommand (Out15T) 'Solenoid
910            Form1SendCommand (Out17T) 'Rot Rev
911            Form1SendCommand (Out16T) 'Rotate
912            WriteStatus ("ShearStep = 21  Clamp & Rotate Off, Home Axis Two")
913        End If
914
915        If ShearStep = 22 And Axis2Stat = 262192 And Val(Timer()) > (ShearTime + 2)
916    Then
917            ShearStep = 0
918            ShearReady = True
919            Form1SendCommand (Out15F) 'Solenoid
920            Form1SendCommand (Out16F) 'Rotate
```

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```
921          Form1SendCommand (Out17F) 'Rot Rev
922            WriteStatus ("ShearStep = 22  Zero Axis Two")
923        End If
924
925        Loop
926
927     End Sub
```

Basic Code for Printer 110 Controller CONT 2
Controller RPC-150

```
1     001 ' NOTES B&W#1.TXT  04/20/2001
2     002 ' CONFIGURE DIG I/O BOARD
3     003 CONFIG PIO 1,0,0,1,1,0
4     010 ' INPUTS AND OUTPUTS
5     011 ' LINE    EVENT
6     012 ' INPUTS                    (BOARD POS #)
7     013 ' OPTO(0)   PRINTER SOLENOID
8     014 ' OPTO(1)   TRANSPORT LIMIT SWITCH
9     015 ' OPTO(2)   TRAY DOWN LIMIT
10    016 ' OPTO(3)   TRAY UP LIMIT
11    017 ' OPTO(4)   CLAMP LIMIT
12    018 '
13    030 ' OUTPUTS
14    031 ' OPTO 8    TRAY ROTATE MOTOR
15    032 ' OPTO 9    VIBRATOR
16    033 ' OPTO 10   BOOK IN PLACE TO I/O ON MAIN UNIT
17    034 ' OPTO 11   15 VDC POWER TO MOTOR
18    035 ' OPTO 12   MOTOR REVERSER
19    036 ' OPTO 13   UNUSED
20    037 '
21    038 '
22    039 '
23    040 '
24    118 ' *****SUBROUTINES*****
25    119 '
26    120 '
27    121 '
28    122 '
29    123 '
30    124 '
31    900 ' INITIALZE VARIABLES
32    910 M1=0 : ' TRANSPORT STATE
```

APPENDIX

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```
33    920 V1=0 : ' VIBRATOR STATE
34    1000
35    1020 ' START OF MAIN LOOP
36    1030 IF OPTO(0)=1 .AND. V1=0 THEN OPTO 9,1 : V1=1
37    1050 IF OPTO(1)=1 .AND. M1=0 THEN GOSUB 5000
38    1060 IF OPTO(1)=0 .AND. M1=1 THEN GOSUB 5500
39    2000 GOTO 1020
40
41    5000 ' TRAY ROTATE AND DUMP ROUTINE
42    5010 M1=1 :' TRANSPORT IS HERE
43    5011 DELAY 2 :' LET THE TRANSPORT SETTLE
44    5015 OPTO 12,0: OPTO 11,1
45    5020 IF OPTO(4)=0 THEN GOTO 5020
46    5022 DELAY 1.5
47    5025 OPTO 11,0 : DELAY .5
48    5100 OPTO 8,1
49    5110 IF OPTO(2)=0 THEN GOTO 5110
50    5115 OPTO 8,0
51    5117 DELAY 1
52    5120 OPTO 12,1:OPTO 11,1
53    5130 DELAY 3
54    5140 OPTO 11,0:OPTO 12,0
55    5180 OPTO 9,0 : V1=0
56    5190 OPTO 10,1
57    5199 RETURN
58
59    5500 ' TRAY UP, RESET 10
60    5510 ' RESET THE CLAMP
61    5550 OPTO 12,0 : OPTO 11,1
62    5560 IF OPTO(4)=0 THEN GOTO 5560
63    5570 OPTO 11,0
64    5580 OPTO 10,0
65    5581 OPTO 8,1
66    5582 IF OPTO(3)=0 THEN GOTO 5582
67    5583 OPTO 8,0
68    5584 OPTO 12,1:OPTO 11,1
69    5585 DELAY 5
70    5586 OPTO 11,0 : OPTO 12,0
71    5590 M1=0
72    5599 RETURN
73
```

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Title of Application: APPARATUS AND METHOD OF ON DEMAND PRINTING, BINDING, AND TRIMMING A PERFECT BOUND BOOK

Basic Code for Printer 200 Controller CONT 3
Controller RPC-52

```
1    001 REM NOTES BB#2.TXT  04/06/2001
2    002 REM CONFIGURE DIG I/O BOARD
3    003 REM CONFIG LINE 100,5,255,255,0
4    004 REM      Do this only once it is saved in System NVR
5    010 REM INPUTS AND OUTPUTS
6    011 REM LINE    EVENT
7    012 REM INPUTS                  (BOARD POS #)
8    013 REM 100  TRANSPORT LIMIT SWITCH
9    014 REM 101  PRINTER SOLENOID
10   015 REM 102  TRAY DOWN LIMIT
11   016 REM 103  TRAY UP LIMIT
12   017 REM 104
13   018 REM 105
14   030 REM OUTPUTS
15   031 REM 108  TRAY ROTATE MOTOR
16   032 REM 109  15 V MOTOR ON
17   033 REM 110  DC MOTOR REVERSER
18   034 REM 111  VIBRATOR
19   035 REM 112
20   036 REM 113  BOOK IN PLACE
21   037 REM
22   038 REM
23   039 REM
24   040 REM
25   118 REM *****SUBROUTINES*****
26   119 REM
27   120 REM
28   121 REM
29   122 REM
30   123 REM
31   124 REM
32   125 REM 7000 DELAY USES D1
33   126 REM
34   127 REM
35   900 REM INITIALZE VARIABLES
36   910 M1=0 : REM TRANSPORT STATE
37   920 V1=0 : REM VIBRATOR STATE
38   1000
39   1020 REM START OF MAIN LOOP
40   1030 IF LINE(101)=0 .AND. V1=0 THEN LINE111,1 : V1=1
41   1050 IF LINE(100)=0 .AND. M1=0 THEN GOSUB 5000
```

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```
42     1060 IF LINE(100)=1 .AND. M1=1 THEN GOSUB 5500
43     2000 GOTO 1020
44
45     5000 REM TRAY ROTATE AND DUMP ROUTINE
46     5010 M1=1 :REM TRANSPORT IS HERE
47     5011 D1=2:GOSUB 7000 :REM LET THE TRANSPORT SETTLE
48     5015 LINE110,0:LINE109,1
49     5020 IF LINE(104)=1 THEN GOTO 5020
50     5022 D1=1.5:GOSUB 7000
51     5025 LINE109,0 : D1=.5 : GOSUB 7000
52     5100 LINE108,1
53     5110 IF LINE(102)=1 THEN GOTO 5110
54     5115 LINE108,0
55     5117 D1=1:GOSUB 7000
56     5120 LINE110,1:LINE109,1
57     5130 D1=3:GOSUB 7000
58     5140 LINE109,0:LINE110,0
59     5180 LINE111,0 : V1=0
60     5190 LINE113,1
61     5199 RETURN
62
63     5500 REM TRAY UP, RESET 113
64     5510 REM RESET THE CLAMP
65     5550 LINE108,1
66     5560 IF LINE(103)=1 THEN GOTO 5560
67     5570 LINE108,0
68     5580 LINE113,0
69     5581 LINE110,0:LINE109,1
70     5582 IF LINE(104)=1 THEN GOTO 5582
71     5583 LINE109,0 :D1=.5 : GOSUB 7000
72     5584 LINE110,1:LINE109,1
73     5585 D1=7:GOSUB 7000
74     5586 LINE109,0:LINE110,0
75     5590 M1=0
76     5599 RETURN
77     7000 REM SUB DELAY
78     7001 CLEAR TICK(0)
79     7002 T1=0
80     7010 DO
81     7015 T1=TICK(0)
82     7020 WHILE T1<D1
83     7045 RETURN
```